**REMARKS**

In the Office Action mailed March 18, 2004, the Examiner noted that claims 1-11 were pending in the application, rejected claims 1-6 and 8-11 under 35 USC § 102(b); and rejected claim 7 under 35 USC § 103(a). In rejecting the claims, U.S. Patents 5,161,115 to Teshima et al. and 5,680,322 to Raimi et al. (References A and B, respectively, in the March 18, 2004 Office Action) were cited. Claims 1-11 remain in the case. The Examiner's rejections are traversed below.

**Newly Cited Prior Art**

**U.S. Patent 5,161,115 to Teshima et al.**

The Teshima et al. patent is directed to a system test apparatus 200 for verifying operability based on specification data stored in file 108 (Figs. 1 and 9) as finite state machine models including an allowable error and "elements represented with time sections which may take place" (Abstract, lines 5-6). The specifications are "expected information" (column 5, line 9) and file 108 is described as storing "event data, action data, and state transition data" (column 5, lines 18-19), each of which "consists of various event names, occurrence conditions, allowable error, and so forth stored in a table format" (column 5, lines 19-21). Event and action detecting sections 104 and 106, respectively, periodically detect operation information as a combination of possible events and actions. Verification section 112 executes a "particular specification" stored in the specification data file to verify operation of the tested system by checking whether the finite state machine is satisfied (see column 2, lines 51-64 and column 5, lines 3-60) as events and actions take place. If there are a plurality of sets of events and actions available in a particular state, automaton 110 selects a set and verifies it. If an inconsistency occurs, it back-tracks to the information selection phase and verifies another set (see column 5, lines 22-27).

**U.S. Patent 5,680,332 to Raimi et al.**

The Raimi et al. patent is directed to measurement of digital circuit simulation test coverage utilizing binary decision diagrams (BDDs) and state bins.

**Rejections under 35 USC § 102(b)**

In item 3 on pages 2-3 of the Office Action, claims 1-6 and 8-11 were rejected under 35 USC § 102(b) as anticipated by Teshima et al. As described above, Teshima et al. only

discloses periodically detecting operation of a test apparatus. In asserting that operations (b)-(e) recited in claim 1 were disclosed by Teshima et al., column 2, lines 35-50; column 5, lines 3-31; column 6, line 60 to column 8, line 46; column 9, line 32 to column 10, line 22; and Figs. 10-12 were cited. The portion of column 2 that was cited describes two objects of Teshima et al. and does not provide enough detail to clarify whether operations (b)-(e) as recited in claim 1 are performed. The portion of column 5 that was cited corresponds to the description of the system taught by Teshima et al. provided above. Little detail of how verification occurs is provided in this portion of column 5.

The portion of Teshima et al. cited from the end of column 6 through two-thirds of column 8 describes Figs. 10-13 which illustrate state transitions "of normal process operations and abnormal process operations" (column 7, lines 3-4) with reference to the system diagram illustrated in Fig. 9. As described at the top of column 7, the system disclosed by Teshima et al. generates the specification according to a finite state machine model and assigns an identification number and weight based on "whether the state and state transitions structure a normal process operation or an abnormal process operation" (column 7, lines 16-17) where "states and state transitions ... [of a] normal process operation are positively weighted, while those ... [of an] abnormal process operation are negatively weighted" (column 7, lines 64-68) during operation of the tested system, "[e]vents and actions are detected according to the finite state machine model" (column 8, lines 20-21 by the event and action detection sections 104, 106 based on detection signals from the tested system 200. This section of Teshima et al. does not contain a detailed description of how verification is performed, only that "detected data is compared with the expected information by the verification section 112 and verified by the automaton 112 which controls the state of the tested system 200 according to the specification stored in the specification data file 108" (column 8, lines 24-28).

The cited portions of columns 9 and 10 refer to Figs. 10-12 and provide an example of how verification is performed. The verification section 112 is described as comparing "event data and action data ... with the expected information stored in the specification data file" (column 9, lines 40-43). In the example, a relationship between "Freezer temperature < Tγ" (column 9, lines 60-61) and the action "Stop compressor and initialize the compressor protection timer" (column 9, lines 61-62) as being "verified with the detection error of the temperature sensor taken into account" (column 9, lines 62-64). The other operations described in the examples in the cited portions of columns 9 and 10 are similar.

Nothing has been cited or found that describes the specific sequence of operations (b)-(e) recited in claim 1. In particular, there is no suggestion of "forming a difference set from the first set and the second set" (column 1, line 11) where the first and second sets are achievable states determined using the finite state description that are without errors in the first set and having an error in the second set. The system taught by Teshima et al. is merely described as taking errors into account, not creating separate sets of achievable states, one of which includes no errors and the other of which includes at least one error, so that a difference set can be formed. Since no such difference set is formed, there is no operation taught or suggested by Teshima et al. of "determining result conditions from the difference set" (claim 1, next to last line).

The present invention provides a benefit over the system taught by Teshima et al. in that the difference set can be used to perform an overall analysis of the system. What is described in Teshima et al. is monitoring the operation of a test system to determine whether it is performing within specifications, not performing "error analysis of at least one of sensors and actuators in a technical system" (claim 1, lines 1-2). Therefore, it is submitted that claim 1 and claims 2-6 which depend therefrom patentably distinguish over Teshima et al.

Claims 8-11 similarly recite determining first and second sets, where the first set is error-free and the second set contains an error and then forming a difference set from the first and second sets for the purpose of rapid prototyping in claim 8, error diagnosis in claim 9, generating critical test cases in claim 10 and preventive maintenance in claim 11. For the reasons set forth above with respect to claim 1, it is submitted that claims 8-11 patentably distinguish over Teshima et al.

**Rejection under 35 USC § 103(a)**

In item 5 on pages 3-4 of the Office Action, claim 7 was rejected under 35 USC § 103(a) as unpatentable over Teshima et al. in view of Raimi et al. Nothing was cited or found in Raimi et al. suggesting modification of the system taught by Teshima et al. to overcome the deficiencies discussed above with respect to claim 1. Since claim 7 depends from claim 1, it is submitted that claim 7 patentably distinguishes over Teshima et al. in view of Raimi et al. for the reasons set forth above with respect to claim 1.

**Summary**

It is submitted that the references cited by the Examiner, taken individually or in combination, do not teach or suggest the present claimed invention. Thus, it is submitted that claims 1-11 are in a condition for allowance. Reconsideration of the claims and an early Notice of Allowance are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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